Sustainability Roadmap: Water Efficiency and Conservation

Progress Report and Plan for Meeting
the Governor's Sustainability Goals
for California State Agencies

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Sustainability Road Map: Water Efficiency and Conservation

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Acronyms

BMP	Best Management Practices
CALGREEN	California Green Building Code (Title 24, Part 11)
DGS	Department of General Services
EO	Executive Order
DWR	Department of Water Resources
ESPM	Energy Star Portfolio Manager
GHGe	Greenhouse Gas Emissions
GSP	Groundwater Sustainability Plan
LCM	The Landscape Coefficient
LEED	Leadership in Energy and Environmental Design
MM	Management Memo
MAWA	Maximum Applied Water Allowance
MWELO	Model Water Efficient Landscape Ordinance
SAM	State Administrative Manual
SGA	Sustainable Groundwater Agency
SGMA	Sustainable Groundwater Management Act
WMC	Water Management Coordinator
WUCOLS	Water Use Classifications of Landscape Species

Glossary

Backflow - is the undesirable reversal of the flow of water or mixtures of water and other undesirable substances from any source (such as used water, industrial fluids, gasses, or any substance other than the intended potable water) into the distribution pipes of the potable water system.

Back flow prevention device – a device that prevents contaminants from entering the potable water system in the event of back pressure or back siphonage.

Blowdown - is the periodic or continuous removal of water from a boiler to remove accumulated dissolved solids and/or sludge. Proper control of blowdown is critical to boiler operation. Insufficient blowdown may lead to deposits or carryover. Excessive blowdown wastes water, energy, and chemicals.

Compost – Compost is the product resulting from the controlled biological decomposition of organic material from a feedstock into a stable, humus-like product that has many environmental benefits. Composting is a natural process that is managed to optimize the conditions for decomposing microbes to thrive. This generally involves providing air and moisture, and achieving sufficient temperatures to ensure weed seeds, invasive pests, and pathogens are destroyed. A wide range of material (feedstock) may be composted, such as yard trimmings, wood chips, vegetable scraps, paper products, manures and biosolids. Compost may be applied to the top of the soil or incorporated into the soil (tilling).

Critical overdraft - a condition in which significantly more water has been taken out of a groundwater basin than has been put in, either by natural recharge or by recharging basins. Critical overdraft leads to various undesirable conditions such as ground subsidence and saltwater intrusion.

Ecosystem services - are the direct and indirect contributions of ecosystems to human well-being. They support directly or indirectly our survival and quality of life. Ecosystem services can be categorized in four main types:

- Provisioning services are the products obtained from ecosystems such as food, fresh water, wood, fiber, genetic resources and medicines.

- Regulating services are the benefits obtained from the regulation of ecosystem processes such as climate regulation, natural hazard regulation, water purification and waste management, pollination or pest control.

- Habitat services provide living places for all species and maintain the viability of gene-pools.

- Cultural services include non-material benefits such as spiritual enrichment, intellectual development, recreation and aesthetic values.

Grasscycling -refers to an aerobic (requires air) method of handling grass clippings by leaving them on the lawn when mowing. Because grass consists largely of water (80% or more), contains little lignin and has high nitrogen content, grass clippings easily break down during an aerobic process. Grasscycling returns the decomposed clippings to the soil within one to two weeks acting primarily as a fertilizer supplement and, to a much smaller degree, mulch. Grasscycling can provide 15 to 20% or more of a lawn's yearly nitrogen requirements

Hydrozone – is a portion of a landscaped area having plants with similar water needs that are served by one irrigation valve or set of valves with the same schedule.

Landscape Coefficient Method (LCM) describes a method of estimating irrigation needs of landscape plantings in California. It is intended as a guide for landscape professionals.

Landscape water budget - is the calculated irrigation requirement of a landscape based on landscape area, local climate factors, specific plant requirements and the irrigation system performance.

Model Water Efficient Landscape Ordinance (MWELO) - The Water Conservation in Landscaping Act was signed into law on September 29, 1990. The premise was that landscape design, installation, and maintenance can and should be water efficient. Some of the provisions specified in the statute included plant selection and groupings of plants based on water needs and climatic, geological or topographical conditions, efficient irrigation systems, practices that foster long term water conservation and routine repair and maintenance of irrigation systems. DWR adopted the Model Ordinance in June of 1992. One element of the Model Ordinance was a landscape water budget. In the water budget approach, a Maximum Applied Water Allowance (MAWA) was established based on the landscape area and the climate where the landscape is located. The latest update to MWELO was in 2015. MWELO applies to all state agencies' landscaping.

Mulch – Mulch is a layer of material applied on top of soil. Examples of material that can be used as mulch include wood chips, grass clippings, leaves, straw, cardboard, newspaper, rocks, and even shredded tires. Benefits of applying mulch include reducing erosion and weeds and increasing water retention and soil vitality. Whenever possible, look for mulch that has been through a sanitization process to kill weed seeds and pests.

Trickle flow – A device that allows users to reduce flow to a trickle while using soap and shampoo. When the device is switched off, the flow is reinstated with the temperature and pressure resumes to previous settings.

Sprinkler system backflow prevention devices – are devices to prevent contaminants from entering water supplies. These devices connect to the sprinkler system and are an important safety feature. They are required by the California Plumbing Code.

Submeter- a metering device installed to measure water use in a specific area or for a specific purpose. Also known as dedicated meters, landscape submeters are effective for separating landscape water use from interior water use, evaluating the landscape water budget and for leak detection within the irrigation system.

Water Budget - A landscape water budget is the calculated irrigation requirement of a landscape based on landscape area, local climate factors, specific plant requirements and the irrigation system performance.

Water-energy nexus - Water and energy are often managed separately despite the important links between the two. 12 percent of California's energy use is related to water use with nearly 10 percent being used at the end water use. Water is used in the production of nearly every major energy source. Likewise, energy is used in multiple ways and at multiple steps in water delivery and treatment systems as well as wastewater collection and treatment.

Water Shortage Contingency Plans - each urban water purveyor serving more than 3,000 connections or 3,000 acre-feet of water annually must have an Urban Water Shortage Contingency Plan (Water Shortage Plan) which details how a community would react to a reduction in water supply of up to 50% for droughts lasting up to three years.

EXECUTIVE SUMMARY

For more than 164 years, the California State Fair has provided an opportunity to showcase and celebrate the best that California has to offer. Fifty years ago, in 1968, the State of California opened California Exposition (Cal Expo) as the new home of the California State Fair. Cal Expo is an independent State Agency, established in law in the California Food & Agriculture Code, and is supported through revenues generated from events, and with no funding from the State of California.

Cal Expo has maintained and enhanced the nearly 800-acre facility located in the American River Floodplain. The 350 developed acres house more than 80 structures totaling more than 1 million square feet, and infrastructure from water wells to roadways, bridges, tunnels, and parking lots. The Cal Expo property is home to Raging Waters Water Park, 2 year around RV Parks, a full service food catering business, Papa Murphy's Park (a multi-use sports facility), and a 1 mile race track which includes 900 horse stalls. Cal Expo is the home of the California State Fair with an attendance of over 700,000 visitors in 17 days. The property functions as an event venue for 2.5 million visitors throughout the year. Cal Expo also serves as a significant emergency response and support facility, and has been designated as: the Emergency seat of State Government; the National Pharmaceutical Stockpile for Norther California; and a Tsunami Recovery Center for the San Francisco Bay Area. In 2017, Cal Expo was officially activated by the Office of Emergency Services as a regional evacuation center and distribution hub during the Oroville Dam incident, and later as a Red Cross staff shelter during the Napa fires.

Cal Expo has a permit for a Community Water System area of service: California Exposition & State Fair. Cal Expo has 6 water wells and does not use or purchase water from the City of Sacramento. Well #1 has been abandoned. Three of the wells are for drinking water and two wells are used for irrigation. In addition to providing water for the 350 acre Cal Expo developed property; Cal Expo provides approximately 60 million gallons of water per year to sustain the Bushy Lake ecosystem in the lower American River Parkway. As per Assembly Bill 889 (Chapter 482), the Cal Expo Board of Directors is required to maintain and preserve Bushy Lake and the Cal Expo Floodplains in a way that is consistent with what a state park and natural preserve are. This requirement is to maintain the riparian habitat but no funds were committed towards this goal. Cal Expo bears the cost for pumping the well water to maintain this habitat.

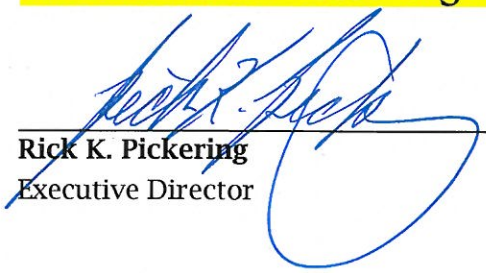
In 2016, Cal Expo applied for and was awarded a water conversation grant from the Department of General Services. This funding is fantastic and resulted in generating a water savings of approximately 13 million gallons of water by replacing 259 toilets, 182 urinals, 314 aerators, and 43 shower heads. Due to the annual population served (2.5 million guests) the total project cost equated to an investment of less than 3 cents per each gallon of water saved.

Historically, Cal Expo has promoted water savings in a partnership with the Department of Water Resources. Over 700,000 people who visit the annual State Fair have the opportunity to view the yearly exhibits produced by DWR. The exhibit is an educational experience about

many aspects of water…from where & how our water comes to residents, drought information, "water sense", and conservation. 'Save Our Water".

Historically, the reported demand of the Water System was based off of estimates provided by Cal Expo because the wells didn't have flow meters. At the end of 2016, flow meters were installed on the wells adding a clearer picture of actual water use moving forward. Cal Expo needs to replace abandoned well #1 which is an estimated cost of $500,000.00. This is a challenge for Cal Expo, a self-funded agency with no general fund support.

Executive Director Signature



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Executive Director

SUSTAINABILITY GOALS

The Governor has directed California State Agencies to demonstrate sustainable operations and to lead the way by implementing sustainability policies set by the state. Sustainability includes the following general initiatives:

- Greenhouse Gas Emissions Reductions
- Building Energy Efficiency and Conservation
- Indoor Environmental Quality (IEQ)
- Water Efficiency and Conservation
- Monitoring Based Building Commissioning (MBCx)
- Environmentally Preferable Purchasing (EPP)
- Financing for Sustainability
- Zero Emission Vehicle (ZEV) Fleet Purchases
- Electric Vehicle Charging Infrastructure
- Monitoring and Executive Oversight

The Governor has issued numerous executive orders directing sustainable state operations. The orders relevant to water are:

Executive Order B-18-12

EO B-18-12 and the companion *Green Building Action Plan* require state agencies to reduce the environmental impacts of state operations by reducing greenhouse gas emissions, managing energy and water use, improving indoor air quality, generating onsite renewable energy when feasible, implementing environmentally preferable purchasing, and developing the infrastructure for electric vehicle charging stations at state facilities. The Green Building Action Plan also established two oversight groups; the staffs level Sustainability Working Group and the executive level Sustainability Task Force, to ensure these measures are met.

Executive Order B-18-12 requires State agencies to reduce agency-wide water use 10% by 2015 and 20% by 2020 as measured against a 2010 baseline. The 2015 and 2020 targets reinforce the SB X7-7 requirement that State agencies reduce water use at facilities they operate to support local water suppliers in meeting their targets.

On February 28, 2013, the California Department of Water Resources issued its Water Use Reduction Guidelines and Criteria, pursuant to Executive Order B-18-12. Each applicable agency was required to take actions to reduce water use in facilities and landscapes that are operated by the state, including facilities owned, funded or leased. State operated facilities are defined as facilities where the agency has direct control of the buildings' function, maintenance and repair. For leased facilities, the Green Building Action Plan directed at that time that new and renegotiated leases include provisions for water conservation, reporting water use and installation of sub-meters to the extent possible and economically feasible.

All the following sections in this water plan and the accompanying worksheet only repeat the initial criteria and guidelines issued at that time. Only the MWELO requirements have been updated since that time. Additionally, other Executive Orders have followed, strengthening and elaborating on the issues contained in EO B-18-12.

EO B-18-12 requires that beginning January 2013, agencies shall regularly report current water use into the water tracking database. Since January 2014, annual water use reports have documented progress towards the 2015 and 2020 targets using the ESPM http://www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager_benchmarking to track energy and water use and to submit annual reports to DGS. (Sustainability Manager, Department of General Services, 707 Third Street, 8th Floor, West Sacramento, CA 95798-9052). Additionally, for facilities with landscape areas over 20,000 sq. ft. the landscape water use must be tracked with a water budget program.

Executive Order B-29-15

EO B-29-15 directs state agencies to take actions in response to the ongoing drought and to the State of Emergency due to severe drought conditions proclaimed on January 17, 2014. The Governor directed numerous state agencies to develop new programs and regulations to mitigate the effects of the drought, and required increased enforcement of water waste state wide. Agencies were instructed to reduce potable urban water use by 25% between 2013 and February 28, 2016.

Executive Order B-30-15

EO B-30-15 declared climate change to be a threat to the well-being, public health, natural resources, economy, and environment of California. It established a new interim statewide greenhouse gas emission reduction target of 40 percent below 1990 levels by 2030, and reaffirms California's intent to reduce greenhouse gas emissions by 80 percent below 1990 levels by 2050. To support these goals, this order requires numerous state agencies to develop plans and programs to reduce emissions.

Other Relevant Executive Orders...

Executive Order B-37-16

EO B37-16 builds on what were formerly temporary statewide emergency water restrictions in order to establish longer-term water conservation measures, including permanent monthly water use reporting, new permanent water use standards in California communities and bans on clearly wasteful practices such as hosing off sidewalks, driveways and other hardscapes. The EO focuses on using water more wisely, and eliminating water waste by taking actions to minimize water system leaks. DWR estimates that leaks in water district distribution systems siphon away more than 700,000 acre-feet of water a year in California - enough to supply 1.4 million homes for a year.

The EO further strengthens local drought resilience and looks to improve agricultural water use efficiency and drought planning. State agencies are to cooperate with urban water management plans which include plans for droughts lasting for at least five years by assuring that the water efficiency and conservation plan has drought contingency action.

State Administrative Manual & Management Memos

The following sections of the State Administrative Manual (SAM), and associated Management Memos (MM), currently impose sustainability requirements for water on the department under the Governor's executive authority:

SAM Sections

- Landscaping practices 1821.5
- Drought moratorium 1821.4

Relevant Management Memos

- MM 15-06 State Buildings And Grounds Maintenance And Operation
- MM 15-04: Energy Use Reduction for New, Existing, and Leased Buildings
- MM 14-02 Water Efficiency and Conservation
- MM 14-07: Standard Operating Procedures For Energy Management In State Buildings
- MM 14-09: Energy Efficiency in Data Centers and Server Rooms

Relevant Legislation

Sustainable Groundwater Management Act of 2014 - The Sustainable Groundwater Management Act (SGMA) directs the Department of Water Resources (DWR) to identify groundwater basins and subbasins in conditions of critical overdraft. Conditions of critical overdraft result from undesirable impacts, which can include seawater intrusion, land subsidence, groundwater depletion, and/or chronic lowering of groundwater levels. As defined in the SGMA, "A basin is subject to critical overdraft when continuation of present water management practices would probably result in significant adverse overdraft-related environmental, social, or economic impacts."

As required in the SGMA, basins designated as high or medium priority *and* critically overdrafted shall be managed under a groundwater sustainability plan or coordinated groundwater sustainability plans by January 31, 2020. All other high and medium priority basins shall be managed under a groundwater sustainability plan by January 31, 2022.

WATER EFFICIENCY AND CONSERVATION REPORT

This Water Efficiency and Conservation Report demonstrates to the Governor and the public the progress the Department has made toward meeting the Governor's goals. This report identifies successful accomplishments, ongoing efforts, and outstanding challenges.

Introduction

California experiences the most extreme variability in yearly precipitation in the nation. In 2015, California had record low statewide mountain snowpack of only 5 percent of average while 2012-14 were the 4 driest consecutive years of statewide precipitation in the historical record. Now, the 2017 water year (October 1, 2016-September 30, 2017) is surpassing the wettest year of record (1982-83) in the Sacramento River and San Joaquin River watersheds and close to becoming the wettest year in the Tulare Basin (set in 1968-69). These potential wide swings in precipitation from one year to the next show why California must be prepared for either flood or drought in any year.

Therefore, using water wisely is critical. The E.O.s and SAM sections listed in the previous section help demonstrate the connection between water and energy use, (the water-energy nexus), water and climate change, and water and landscaping. Further, the impact of water uses by state agencies goes beyond the scope of these E.O.s and SAM sections and DGS management memos as these documents do not address such related issues as water runoff from landscaping and various work processes and the potential for water pollution or the benefits of water infiltration, soil health and nutrient recycling. However, by using holistic water planning, a well-crafted water plan can not only meet all state requirements but add considerable value and benefits to the organization and surrounding communities.

Department Mission and Built Infrastructure

The California Exposition & State Fair (Cal Expo) is a self-funded State Agency. The mission of Cal Expo is to create a State Fair experience reflecting California including its industries, agriculture, and diversity of its people, traditions and trends shaping its future supported by year around events. Education of the public is part of our mission.

Cal Expo does not purchase water from an outside source. There are 6 wells on the property that provide all of the water supply to the property. There are more than 80 buildings on the property totaling more than 1 million square feet. Below is the square footage of the larger buildings:

Administration: 23,000 square feet
The Point: 14,000 square feet
Horse Barns and related horse racing structures: 368,620 square feet
Grandstand & Satellite Wagering: 227,000 square feet

Pavilion: 104,000 square feet
Buildings C/D: 53, 264 square feet
Cavalcade stables & Log Cabin: 24,832 square feet
Law Enforcement Offices: 10,920 square feet
Expo Center: 75,546 square feet
Maintenance Building & Warehouse: 60,200 square feet
Building A/B: 85,248 square feet

The remaining approximately 100,000 square feet are smaller buildings: outdoor restrooms, parking lot & entrance gate booths, the farm, monorail shop, water tower, RV Park office, Tote Board.

Cal Expo does not purchase water from the City of Sacramento. We have our own wells.

Table 1: Total Purchased Water

Purchased Water	Quantity	Cost ($/yr)
Potable	0	$
Recycled Water	0	$
	0 Gallons	$ 0

Table 2: Properties with Largest Water Use Per Capita

Building Name	Area (ft^2)	Total Gallons	Total Irrigation in Gallons (if known)	Gallons per Capita
Cal Expo	15,246,000	160 million	Unknown	64
Bushy Lake-American River Parkway	871,200	60 million	60 million	unknown
Total for Buildings in This Table	A ft^2	220,000,000		---
Total for All Department Buildings	X ft^2			---
% of Totals	A/X %	B/Y %		---

Table 3a: Properties with Largest Landscape Area

Building Name	Area (ft^2)
Cal Expo Landscape Area-approximately 35 acres	1,524,600
Total for Buildings in This Table	A ft^2
Total for All Department Buildings	X ft^2
% of Totals	A/X %

We have cut our landscape watering as per the mandate. We posted many signs across our property that watering was being reduced because of the drought so that the public was aware of why our landscape areas were browning. There are hundreds of trees on our property. Some

of them are 50+ years old. Cal Expo has planted trees yearly across the property and the trees are considered an important asset. Adequately watering trees is important and we have drip systems in place for the trees.

In the past we have had water filled lagoons on the south side of our property. We emptied the lagoons to save water and only fill some of them during the annual State Fair. Also, as part of our drought response, we use a street sweeper on asphalt surfaces daily rather than use a fire hose to wash the grounds.

Due to the water conservation grant from the Department of General Services, we saved at least 13 million gallons of water as a result of replacing toilets, urinals, aerators, and shower heads with low flow water efficient products.

In a partnership with Cal Expo, the Department of Water Resources has displayed exhibits at the California State Fair for the last several years. The goal of these exhibits is to educate the public about Water. The exhibits are interesting, interactive, and educational. These exhibits are for all age groups and most recently showcased "Creating Water-Wise & Edible Gardens."

Department Wide Water Use Trends

Year	Total Occupancy /year	Total Amount Used (Gallons/year)	Per capita Gallons per person per day
Baseline Year 2010	2,153,000	214,848,000	.27
Baseline Year 2013	2,340,000	225,797,600	.26
2016	2,570,000	188,430,900	.20
2020 Goal		171,879,000	

Cal Expo has achieved water savings but still have some challenges to meet the reduction goals. With the installation of water flow meters to our wells at the end of 2016, 2017 should be a more accurate picture of actual water use. The 60 million gallons of well water that we are pumping into Bushy Lake every year will to continue to support the habitat.

Table 4: Total Water Reductions Achieved

Total Water Use Compared to Baseline	Total Amount Used (gallons per year)	Annual Gallons Per capita
20% Reduction Achieved		
Less than 20% Reduction	188,430,900	75.37
25% Reduction Achieved		
Less than 25% Reduction Achieved	188,430,900	
Totals		
Department-Wide Reduction	42,969,000	17

New irrigation controls were installed in 2014 to allow control from a central location. All water flows from the east side of the facility were diverted to a pond in the center of the racetrack for irrigation purposes. At the end of 2016, flow meters were installed on all wells.

Table 5: Summary of Indoor Water Efficiency Projects Completed or In Progress

Year Started	Water Saved (Gallons/yr)	Cost Savings per Year
2012		
2013		
2014		
2015	13,000,000	unknown
2016		

Table 6: Summary of Boilers and Cooling Systems Projects Completed or In Progress

Year Funded	Water Saved (Gallons/yr)	Number of Systems with Water Efficiency Projects	Percent of Department Heating and Cooling systems
2012			
2013			
2014			
2015			
2016			

No boiler or cooling system water efficiency projects have been completed at this time. As funds become available, these projects will be planned. In 2018, we are purchasing a new cooling system for our Administration Building. The new system will be more efficient than the older system we are replacing.

Note for Table 7: Record all Landscaping Hardware Water Efficiency projects in Tab I1. The summary will then be found in Tab I2.

Table 7: Summary of Landscaping Hardware Water Efficiency Projects Completed or In Progress

Year Funded	Water Saved (Gallons/yr)	Estimated Annual Cost Savings	Total Number of Projects per Year
2012	Unknown	Unknown	Well #3 Improvements
2013	Unknown	unknown	Irrigation upgrades
2014	Unknown	Unknown	Storm Water diversion
2015	Unknown	unknown	Well #4 Rehab
2016	Unknown	unknown	Added Meters to Wells

Improvements were made to Well #3 in 2012. Irrigation upgrades project in 2013. Storm Water diversion to racetrack irrigation project completion in 2014. Backstretch Tire Wash Station

completed in 2014 to reduce soil/sand from going into storm drains. Well #4 rehab was done in 2015.

Table 8: Summary of Living Landscaping Water Efficiency Projects Completed or In Progress

Year Funded	Water Saved (Gallons/yr)	Landscape Area MWELO (ft2)	Climate Appropriate Landscape Area (ft2)
2012			
2013			
2014			
2015			
2016			

See Table 7 for projects that include living landscape and hardware efficient projects.

Water Shortage Contingency Plans and Critical Groundwater Basins

Urban water suppliers are required to maintain Water Shortage Contingency Plans that are customized to local conditions. These plans include a staged response to water shortages and droughts lasting up to three years. When implementing the stages of the Water Shortage Contingency Plan, the water supplier will require increasingly stringent reductions in water use.

State agencies are to be aware of their water suppliers' Water Shortage Contingency Plan and the potential impact each stage may have on their water use. State agencies are to have their own contingency plans in place for their building and landscaping water use in order to respond to any stage implemented by the water supplier.

The Sustainable Groundwater Management Act (SGMA) established a new structure for managing California's groundwater resources at a local level by local agencies. SGMA requires, by June 30, 2017, the formation of locally-controlled groundwater sustainability agencies (GSAs) in the State's high- and medium-priority groundwater basins and subbasins (basins). A GSA is responsible for developing and implementing a groundwater sustainability plan (GSP) to meet the sustainability goal of the basin to ensure that it is operated within its sustainable yield, without causing undesirable results. For those facilities located in critical groundwater basins, state agencies are are to work with the local GSA plan.

Table 9: Number of Buildings with Urban Water Shortage Contingency Plans and in Critical Groundwater Basins

Number of Buildings with urban water shortage contingency plans.	Number of buildings in critical groundwater basins	Total Amount of water used by buildings in critical groundwater basins (Gallons)
0	0	0

Building Inventories Summary

All of the items in table 10 were replaced in 2015/2016 except for 6 washing machines.

Table 10: Summary of Building Inventory Needs

Number of toilets to be replaced with 1.25 gallon per flush	Number of urinals to be replaced	Number of faucet aerators to be replaced	Number of showerheads to be replaced @ 2.0 gpm and trickle flow control	Number of clothes washers to be replaced with Energy Star washers	Number of garbage disposals to be replaced.	Number of pre-rinse valves to be purchased and replaced
0	0	0	0	6	0	0

Heating and Cooling Systems Inventories Summary

Table 11: Summary of Boilers and Cooling Systems Inventory

Amount of Water Used for make up (Gallons)	Number of flash tanks to purchase and install	Number of meters to purchase and install	Amount currently reused? (Gallons)	Remaining additional water suitable for other purposes such as irrigation (Gallons)
0	0	10	Unknown	0

Irrigation Hardware Inventories Summary

Landscaping typically uses 50 percent or more of an agency's total water use. While landscaping serves critical functions, the accompanying irrigation hardware, if not properly installed and maintained, can contribute to water waste. By reviewing and inventorying all irrigation hardware, it is possible to achieve significant water savings.

Directions for completing Table 12.

Irrigation hardware purchases, as listed below, will be addressed as budget allows. Currently, the irrigation hardware required for the large square footage of our property, the purchase of replacement or new hardware is currently cost prohibitive in one budget year. Meters have been installed in water wells.

Table 12: Summary of Irrigation Hardware Inventory

Number of separate meters or sub-meters to purchase and install.	Number of irrigation controllers required with weather or soil moisture adjustment and flow sensing capabilities to purchase and install.	Number of backflow prevention devices to purchase and install.	Number of flow sensors to be purchased and installed	Number of automatic rain shut-off devices needed	Number of new pressure regulators to purchase and install.	Number of new hydrozones needed.	Number of new valves to purchase and install.	Number of filter assemblies to purchase and install.	Amount of drip irrigation to purchase and install (area covered)	Number of booster pumps to purchase and install	Number of rotary nozzles or other high efficiency nozzles to purchase and install

Living Landscape Inventory

Far from being just an aesthetic or ornamental feature, landscaping plays a critical role around public buildings and facilities. From providing safety and security, to reducing local heat islands, suppressing dust, reducing water runoff, maintaining soil health, aiding in water filtration and nutrient recycling, landscaping around public buildings is essential. Further, landscaping in public places frequently surrounds historic places and public memorials as well as provides pleasant public gathering spaces. The health and proper maintenance of these landscapes is vital to the physical wellbeing of California's people as well as to its social, cultural, political and historical life.

Additionally, the many vital ecosystem functions carried out by living public landscaping are critical in helping California meet its goals for greenhouse gas reduction, climate adaptation, and water and energy efficiency and water conservation.

Urban forests are vital to improve site conditions for occupants and visitors to buildings and the surrounding community.

Our large trees at Cal Expo are considered valuable infrastructure and given priority over other plants to maintain tree health.

We have a 911 Memorial at Cal Expo honoring the victims lost 16 years ago. The exhibit is a beautiful fountain including a granite sphere inscribed with all of the names of the September 11 victims, as well as a carillon bell tower, reflections of the World Trade Center, and individual memorials to American Airlines Flight 77, which crashed into the Pentagon, and United Airlines Flight 93, aborted in a field in Pennsylvania.

The California Forest Center is a beautiful, shaded area at Cal Expo featuring 40 native species of trees. This one acre forestry exhibit seeks to educate guests about the important role that sustainable forestry plays in California. Guests to the California State Fair can learn about the environmental and economic benefits of our forests, as well as some of the threats they face. The exhibit also features rescued forest wildlife, kids' crafts, a portable mill demonstration, a chainsaw carver and free tree seedlings for all our guests.

Table 13: Summary of Living Landscape Inventory

Landscape >500Sq. ft.)	Turf (Sq. ft.)	Number of historical sites Or memorials	MWELO landscape area (Sq.ft.)	Climate appropriate landscape area (Sq.ft.)
35 acres		1		

Large landscape water use

Large landscape water use often represents a significant percentage of a facility's water use and significant water savings can often be achieved through better irrigation scheduling or inexpensive improvements in irrigation hardware. As part of the Water Use Guidelines and Criteria, the water use for landscape areas over 20,000 sq. ft. shall be tracked through a water budget program.

Table 14. Summary of Large Landscape Inventory and Water Budget

Number of Facility Sites/Locations with > 20,000 sq.ft. of Landscaping	Total Landscape Area per facility	Total Water Budget per facility	Total EPA WaterSense or Irrigation Association Certified Staff
	35 acres		1

BMPs

Building Best Management Practices (BMPs) are ongoing actions that establish and maintain building water use efficiency. State agencies are required by DGS Management Memo 14-02 to implement the building BMPs outlined below.

Building Water Management BMPS

General Water Management

- Monthly water use is tracked and recorded. Use is tracked by the water meters on the wells.

Leak Detection and Repair

Monthly, maintenance staff visually survey water fixtures to observe and fix any leaks.

259 toilets, 114 urinals, 314 aerators, and 43 shower heads have been replaced with low flow fixtures in 2015/2016.

Kitchens

Dishwashers are run when full and are replaced as needed. Water temperatures and flow rates are set according to manufacturer recommendations. Ice machines are used primarily in the spring & summer and there is never enough ice. Ice is not melted or wasted. Utensils, pots, pans, and dishes are presoaked in water. Running water is not used to defrost food and water is not allowed to flow unnecessarily.

Laundry Facilities

Large size washing machine is used by employees to wash rags and other janitorial fabric materials. Other washing machines on the facility are coin operated and used by RV Park guests. Temperatures and amount of water used are set on machines as per manufacturer's guidelines.

Building Heating and Cooling Systems BMPs

- Develop and implement a routine inspection and maintenance program to check steam traps and steam lines for leaks. Cal Expo does not have any steam traps or steam lines.
- Repair leaks and replace faulty steam traps as soon as possible. Cal Expo does not have any steam traps.
- A boiler tuning program is implemented at least once a year.
- Provide proper insulation on steam and condensate return piping, as well as, on the central storage tank. Cal Expo does not have steam piping; however, all hot water lines are insulated.
- For both cooling towers and boilers, obtain the services of a water treatment specialist to prevent system scale and corrosion and to optimize cycles of concentration. Treatment programs should include routine checks of boiler water chemistry. There are extended periods of time in which the systems are not being used known as "down times". Cal Expo uses the down times for preventative maintenance and will drain, clean, and treat the systems.
- Develop and implement routine inspections and maintenance programs on condensate pumps. Cal Expo does not currently have condensate pumps.
- Regularly inspect both the water side and fire side of the boiler. If needed, clean the tube surfaces to ensure optimal heat transfer thereby maximizing system energy efficiency. Yearly preventative maintenance is competed on water side, including chemical treatments. In addition, Cal Expo conducts annual fire side preventative maintenance controls and burners.

- Adjust boiler and cooling tower blowdown rate to maintain TDS at levels recommended by manufacturers' specifications. Cal Expo currently has what is known as a closed loop system related to our boilers; as such "blowdown" is not a manufactures' specification/recommendation. However, Cal Expo does conduct blowdowns for the cooling towers as specified by the manufactures' recommendations.

- Shut off water-cooled air conditioning units when not needed, or replace water-cooled equipment with air-cooled systems. Cal Expo's practice is to shut off water-cooler air conditioning units when not in use. When applicable, Cal Expo will replace more efficient and cost effective water-cooled equipment with air-cooled systems. For example, we are currently replacing the Administration building's older, water-cooled system with a more water wise, air cooled system.

Landscaping Hardware Maintenance BMPS

Discuss how each of the BMPs is implemented; give the number of repairs and replacements as well as the estimated water savings under each BMP.

Landscape staff routinely checks valves, swing joints, and replaces nozzles. Watering is generally done in the mornings so staff is able visibly see any problems with sprinklers.

There are faucet timers for hose or hand irrigation

There are shut-off nozzles or quick-couplers for all hoses

Living Landscape BMPs

Discuss how each of the BMPs is implemented; give the number of repairs and replacements as well as the estimated water savings under each BMP.

- Trees, hundreds of them, are given highest priority for watering. During drought trees were watered via drip systems
- Trees and large shrubs have highest priority for survival. Trees are evaluated by a licensed tree service when our Landscape Department observes potential tree disease or distress.
- Mulch is used on annual spring plantings of flowers. Due to budget constraints, Annual flower planting is limited to small, specific areas.
- Irrigation schedule is adjusted for seasonal changes by landscape personnel.
- Irrigation systems are checked monthly to check for leaks and misalignment, and other malfunctions. Repairs are made as needed. With approximately 35 acres of landscaping, repairs are routine.
- Watering is generally scheduled for the early mornings unless there are a large number of public show attendees on the grounds. During large public early morning events, scheduling is modified to evening hours.

- Sprinklers are directing water to landscape areas only. Because this is a large scale public venue, water running on asphalt/hardscape areas is identified and corrected quickly as to avoid wasting water and to avoid any potential slip and falls to guests.
- WUCOLS are used to check plant water use requirements.
- Species that are native to the climate zone are purchased and planted.
- There is no need to waste clean water for irrigation when a storage basin or manmade lake is available to hold water for re-use. We have this system within the Race Track infield at the east end of the facility.

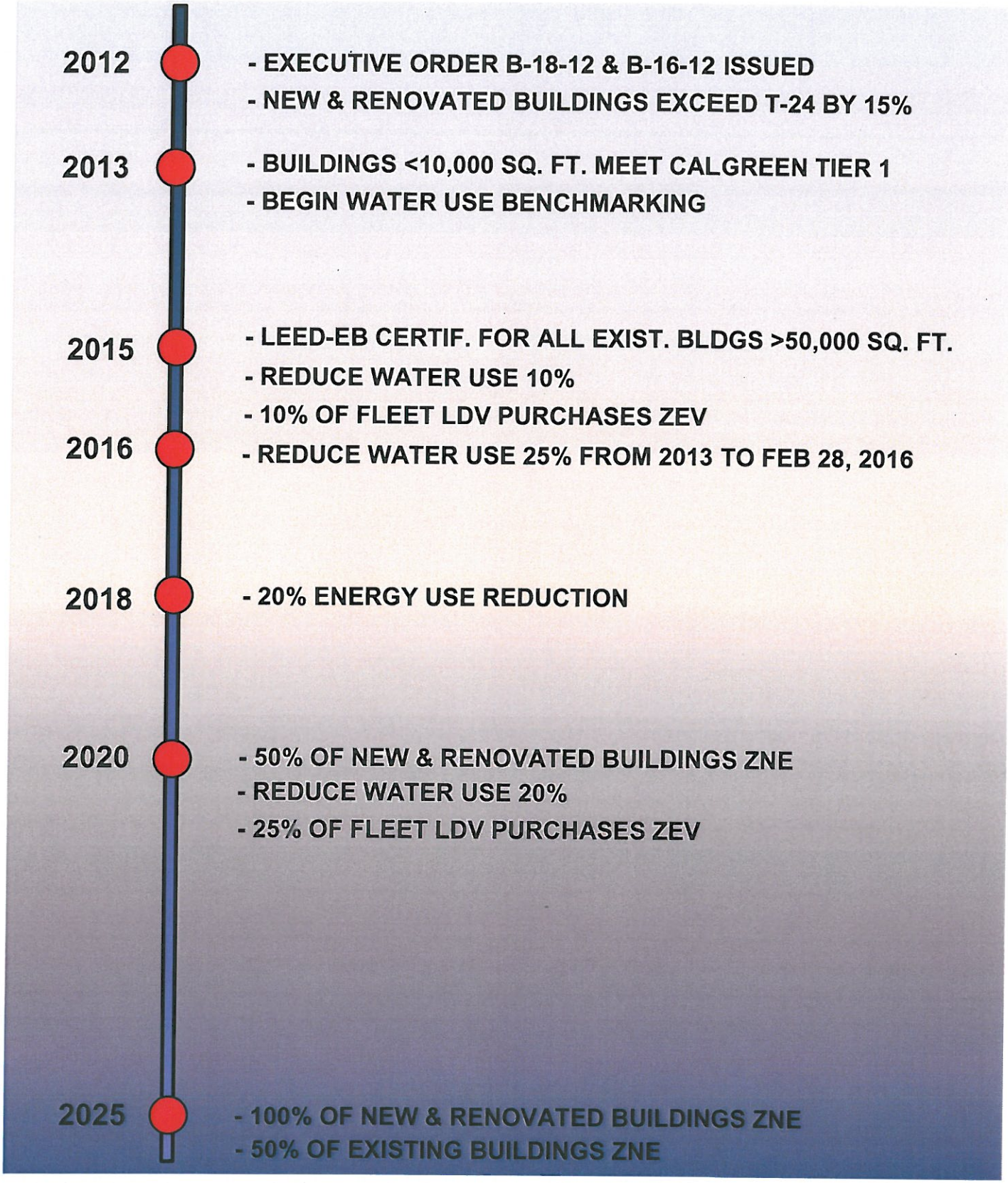
- Incorporate plantings for pollinators
- When planting new areas or replacing plants, compost is added to the soil. We have a farm on our property where pollinators have watermelon, squash, and other plantings that attrack pollinators.

Monitoring, Reporting and Compliance

Each state agency is responsible for monitoring water use and reporting baseline and annual water use for compliance with the water use reduction targets. Water use shall be measured at facilities that have meters and submeters.

Water use must be estimated at state facilities that do not have water meters. All estimates and assumptions of water use should be well documented.

SUSTAINABILITY MILESTONES & TIMELINE



RESPONSIBLE DEPARTMENT, PROGRAMS AND EMPLOYEES

List individuals, offices, and divisions responsible for leading efforts related to each initiative identified in this report. Include their respective titles, roles, responsibilities. The "**responsible party**" is the individual or entity that controls, manages, or directs the entity and the disposition of the entity's funds and assets

Indoor Water Efficiency Projects In Progress First initiative	
Steve Launey	Project Manager, Planning Department
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Boilers and Cooling Systems Projects In Progress	
James Dailey	Stationary Engineer. Lead person over HVAC
Robert Stroud	Chief of Plant Operations
Landscaping Hardware Water Efficiency Projects In Progress	
Melodee Dailey	Supervisor, Facility Landscaping

Living Landscaping Water Efficiency Projects In Progress	
Melodee Dailey	Supervisor, Facility Landscaping

Buildings with Urban Water Shortage Contingency Plans In Progress	
Individual or division name	Title, role, responsibilities, managers, etc.